**In the Claims**

## CLAIMS

1. (Currently amended) Temperature compensation apparatus for thermally loaded bodies made from materials of ~~low~~ a specific thermal conductivity, comprising:

a heat-distributing device having one or more heat-distributing bodies; and

a thermally loaded body, the heat-distributing device is adapted to surfaces of the thermally loaded body such that there remains between the thermally loaded body and the one or more heat-distributing bodies a gap which is filled with a fluid for the purpose of thermal coupling the thermally loaded body and the one or more heat-distributing bodies in conjunction with mechanical decoupling.

2. (Original) Temperature compensation apparatus as claimed in claim 1, wherein the fluid-filled gap is connected to a pressure-compensating device via a connection.

3. (Currently amended) Temperature compensation apparatus as claimed in claim 1, wherein the one or more heat-distributing bodies are solid and are made from a material of high specific thermal conductivity comprising at least one material from a group of Cu, Al, Ag, $Al_2O_3$ or SiC, the specific thermal conductivity being ~~substantially higher than, in particular~~ at least ten times as high as that of the material of which the thermally loaded body substantially consists.

4. (Previously presented) Temperature compensation apparatus as claimed in claim 1, wherein at least one of the one or more heat-distributing bodies is designed as a hollow body whose inner volume is filled with a fluid which executes a circulating flowing motion.

5. (Currently amended) Temperature compensation apparatus as claimed in claim 1, wherein at least one of the one or more heat-distributing bodies is connected via a supporting body to an external bearing structure, and is held by the latter, while there is no connection, or ~~only a connection of very low stiffness (elastic connection)~~ an elastic connection between the thermally loaded body and the at least one of the one or more heat-distributing bodies, as well as between the thermally loaded body and the supporting body.

6. (Previously presented) Temperature compensation apparatus as claimed in claim 1, wherein the one or more heat-distributing bodies are adapted to internal surfaces of the thermally loaded body.

7. (Original) Temperature compensation apparatus as claimed in claim 1, wherein the fluid-filled gap is connected to a sealable filling device via a connection (connecting channel).

8. (Previously presented) Temperature compensation apparatus as claimed in claim 4, wherein for the purpose of generating the circulating flowing motion of the fluid, which fills the one or more heat-distributing bodies designed as a hollow body, a recirculating device is connected to inlet and outlet openings of the one or more heat-distributing bodies which are provided for this purpose.

9. (Previously presented) Temperature compensation apparatus as claimed in claim 1, wherein at least one of the one or more heat-distributing bodies is connected to one or more heat exchange elements of a temperature controller.

10. (Previously presented) Temperature compensation apparatus as claimed in claim 9, wherein the one or more heat exchange elements are formed by a Peltier element.

11. (Original) Temperature compensation apparatus as claimed in claim 8, wherein a temperature controller of the flowing fluid is inserted into the circuit of this fluid.

12. (Previously presented) Temperature compensation apparatus for reflecting layer supports or substrates in optics, comprising:

a heat-distributing device having one or more heat-distributing bodies; and

a substrate comprising a thermally loaded body, the heat-distributing device is adapted to surfaces of the thermally loaded body such that there remains between the thermally loaded body and the heat-distributing bodies a gap which is filled with a fluid for the purpose of thermal coupling of said thermally loaded body and said heat-distributing bodies in conjunction with mechanical decoupling.

13. (Currently amended) Temperature compensation apparatus as claimed in claim 12, wherein the fluid-filled gap is connected to a pressure-compensating device via a connection~~, i.e. a volume-compensating channel~~.

14. (Currently amended) Temperature compensation apparatus as claimed in claim 12, wherein the heat-distributing bodies are solid and are made from a material of high specific thermal conductivity comprising at least one material from a group of Cu, Al, Ag, $Al_2O_3$ or SiC, the specific thermal conductivity being ~~substantially higher than, in particular~~ at least ten times as high as that of the material of which the thermally loaded body substantially consists.

15. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein at least one of the one or more heat-distributing bodies is designed as a hollow body whose inner volume is filled with a fluid which executes a circulation.

16. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein at least one of the one or more heat-distributing bodies is connected via a supporting body to an external bearing structure, and is held by the latter, while there is no connection, or only a connection of very low stiffness between the thermally loaded body and the at least one of the one or more heat-distributing bodies, as well as between said thermally loaded body and said supporting body.

17. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein the one or more heat-distributing bodies are adapted to internal surfaces of the thermally loaded body.

18. (Original) Temperature compensation apparatus as claimed in claim 12, wherein the fluid-filled gap is connected to a sealable filling device via a connection.

19. (Previously presented) Temperature compensation apparatus as claimed in claim 15, wherein for the purpose of generating the circulation of the fluid, which fills the one or more heat-distributing bodies designed as a hollow body, a recirculating device is connected to inlet and outlet openings of the one or more heat-distributing bodies which are provided for this purpose.

20. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein at least one of the one or more heat-distributing bodies is connected to one or more heat exchange elements of a temperature controller.

21. (Previously presented) Temperature compensation apparatus as claimed in claim 20, wherein the one or more heat exchange elements are formed by a Peltier element.

22. (Original) Temperature compensation apparatus as claimed in claim 19, wherein a temperature controller of the flowing fluid is inserted into the circuit of this fluid.

23. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein the substrate comprises an optical substrate with a surface, and wherein at least one of the one or more heat-distributing bodies is provided with a multiplicity of finger-type projections which are good thermal conductors and are aligned at least approximately perpendicular to the optical surface as antecedent basis.

24. (Original) Temperature compensation apparatus as claimed in claim 23, wherein the projections reach up to near the optical surface.

Claim 25 (Canceled).

26. (Previously presented) Temperature compensation apparatus as claimed in claim 1, wherein the thermally loaded body comprises a microlithographic projection exposure objective having at least one mirror support, and wherein the at least one mirror support is provided with the heat-distributing device.

27. (Previously presented) Temperature compensation apparatus as claimed in claim 12, wherein the thermally loaded body comprises a microlithographic projection exposure objective having at least one mirror support, and wherein the at least one mirror support is provided with the heat-distributing device.

28. (New) Temperature compensation apparatus as claimed in claim 13, wherein the fluid-filled gap is connected to the pressure-compensating device via a volume-compensating channel.